

ADDITIONAL FEE

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REMARKS

Applicants respectfully request reconsideration and allowance of this application in view of the amendments above and the following comments.

At the outset, Applicants wish to thank Examiner Vollano for the courtesy of the recent interview.

Amendments have been made to claims 1, 9, 10 and 15. A clean copy of these claims is presented above. A mark-up showing the changes that have been made to these claims using brackets and underlining is attached.

Before addressing the substantive rejections, Applicants point out that, as discovered during the interview, there was some confusion about the scope of the invention. Claims 1 and 15 have been amended in a manner that, hopefully, clarifies the situation. According to claim 1 the inventive process comprises the use of two metal-containing compounds. The **first metal-containing compound** is a **transition metal catalyst**, and this first metal-containing compound comprises a transition metal from Periodic Table Groups 3-11 bonded to one or more elements

selected from Periodic Table Groups 14-17. The second metal-containing compound is a compound that increases the activity of the transition metal catalyst, and this second metal-containing compound comprises a metal of Periodic Table Groups 1, 2 or 13 bound to hydrogen or one or more elements of Periodic Table Groups 14-17. According to claim 15, *one or more cocatalysts* may be employed in addition to the first metal-containing compound and the second metal-containing compound.

Although claims 1, 9, 10 and 15, and, therefore, also the claims dependent thereon, have been amended to clarify the invention as claimed, a fair reading of the amended claims will reveal that the departures from the previous claims were, in fact, for clarification purposes only, and that Applicants did not narrow the claims in any material respect. Therefore, Applicants submit that the amended claims are entitled to the full range of equivalents.

New claim 25 is identical to claim 1, as amended, save for the fact that the second metal-containing compound cannot consist of a compound of a metal of Periodic Table Groups 1, 2 and 13 bonded to an element of Periodic Table Group 17. Therefore, this second metal-containing compound cannot be, for example,  $\text{MgCl}_2$ .

Applicants submit that the instant claims clearly satisfy the requirements of 35 USC § 112, and are not anticipated or rendered obvious by the cited prior art. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw all of the outstanding rejections in view of the amendments above and the comments below.

Claims 1-4, 15 and 19-24 were rejected under 35 USC § 112, first paragraph, as being broader than the enabling disclosure. In response, Applicants hope that the scope of the instant claims has been clarified by the amendments above, and that the enablement is now clear. The first metal-containing compound is a transition metal catalyst comprising i) a transition metal selected from Periodic Table Groups 3-11 and ii) one or more elements selected from Periodic Table Groups 14-17 bonded to the transition metal.

In prior patent, U.S. Patent No. 6,117,372, there is disclosed a transition metal catalyst comprising i) a transition metal selected from Periodic Table Groups 4-10 and ii) a halide (i.e., an element from Periodic Table Group 17.) See claim 1 thereof. In prior patent, U.S. Patent No. 6,221,285, there is also disclosed a transition metal catalyst comprising i) a transition metal selected from Periodic Table Groups 3-11 and ii) one or more elements from Periodic Table Groups 15 or 16 bonded to the metal. See claim 1 thereof. And, in prior patent, U.S. Patent No. 6,303,093, there are disclosed a transition metal catalyst comprising a transition metal carbides (i.e., a transition metal of Periodic Table Groups 4-10 bonded to carbon of Periodic Table Group 14.) Thus, the instant transition metal catalyst was already known in the prior art. The present invention can, consequently, be viewed then as essentially the combination of the known transition metal catalyst with the second metal-containing compound required by the present claims.

In view of the foregoing, Applicants submit that there is no reason to doubt the enablement for the first metal-containing compound, i.e., the transition metal catalyst. Applicants submit that there is no good reason to doubt the enablement for the second metal-containing compound either, and the scope thereof is much narrower, and the specification contains detailed generic teachings and also 17 specific examples enabling the full scope of this second metal-containing compound, as claimed.

Further, in the instant examples, it is proven that the combination of the transition metal catalyst and this second metal-containing compound increases the activity of the transition metal catalyst. Exactly this improvement is claimed in the instant claims, wherein it is required that the second metal-containing compound “[increases] the activity of [the] transition metal catalyst.” Consequently, the claims are tailored to be exactly commensurate in scope with the improvement, and, thus, the enablement.

Contrary to the Examiner’s position, the specification beginning at page 3 first provides a wealth of general details about the nature of the second metal-containing compound and its mode of operation within the inventive process, then concludes with a large number of examples exemplifying the inventive process from a variety of different standpoints. Respectfully, pointing to a general unpredictability in the catalyst art does not satisfy the Examiner’s burden of providing evidence or sound scientific reasoning why persons skilled in the art would doubt the allegations in the specification that the inventive process is enabled to the extent claimed. The

Examiner has not provided any evidence or any sound scientific reasoning whatsoever tending to cast doubt on any of *these specific allegations* in the specification.

Given that the transition metal catalyst is known in the prior art, and that the second metal-containing compound is described in detail in the specification along with its mode of operation, and exemplified in a large number of examples, and that the claims are limited by functional language to only operative embodiments, i.e., where the second metal-containing compound “[increases] the activity of [the] transition metal catalyst,” Applicants submit that there is, in fact, no enablement problem.

Claims 15-17 were rejected under 35 USC § 112, second paragraph, as being indefinite. In response, Applicants have amended claim 15, and, therefore, also claims 16 and 17, to make clear that the cocatalysts are “*in addition* to said first metal-containing compound and said second metal-containing compound.” This makes it perfectly clear that the cocatalysts are not already recited in claim 1. If further clarification is needed, Applicants direct the Examiner’s attention to the last paragraph on page 4 of the specification and the paragraph bridging pages 4-5.

Claims 1, 3-5, 8, 9 and 16 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2 and 6 of U.S. Patent No. 6,117,372. In response, Applicants point out that the claims of the prior patent lack any teaching or suggestion of the second metal-containing compound, or of the second metal-

containing compound “increasing the activity of [the] transition metal catalyst,” as required by the instant claims. As explained in the last paragraph on page 3 of the specification and continuing over to the top of page 8, the introduction of the second metal-containing compound is demonstrated in the examples in the specification to result in an unexpected, yet unmistakable, enhancement of the activity of the transition metal catalyst. Although these data are not in declaration form, consistent with the rule that *all* evidence of nonobviousness must be considered when assessing patentability, the Examiner must consider data in the specification in determining whether the claimed invention provides unexpected results. *In re Soni*, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995). Further, the data in the instant specification are, in fact, commensurate in scope with the claims, as the claims require that the second metal-containing compound “[increase] the activity of [the] transition metal catalyst,” and, therefore, the claims cover only embodiments where the unexpected improvement demonstrated is realized.

There is nothing in the claims of the cited patent that teaches or suggests the second metal-containing compound, or the unexpected improvement demonstrated on the present record attendant to its use. Accordingly, the present claims are not obvious over the claims of the cited prior patent, and, consequently, there cannot be obviousness-type double patenting.

Claims 1-6, 8, 9 and 15-20 were rejected under 35 USC § 102(b) as being anticipated by Bogdanovic et al. (“Bogdanovic”), DE 196 28 159. In response, Applicants would remind the Examiner that anticipation requires that each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference, and, further, the

absence in the prior art reference of even a single one of the claim elements is sufficient to negate anticipation. *In re Robertson*, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). The cited Bogdanovic reference is the German equivalent of U.S. Patent No. 6,117,372, cited hereinabove. Bogdanovic lacks any teaching of the second metal-containing compound “increasing the activity of [the] transition metal catalyst,” as required by the instant claims. Consequently, Bogdanovic cannot anticipate the present claims.

Further on this point, Applicants would call the attention of the Examiner to the third paragraph on page 6 of the instant specification. There is an acknowledgment that the Bogdanovic reference previously used ethyl bromide and magnesium together, which, if combined in sufficient amount, could give rise *in situ* to EtMgBr, which is structurally technically a second metal-containing compound within the present claims. However, as stated in the third paragraph on page 6 of the instant specification, Bogdanovic previously used “a maximum of 4 drops of ethyl bromide \* \* \* for etching the Mg surface.” Such amount is inadequate to provide an “[increase in] the activity of [the] transition metal catalyst,” as required by the instant claims. Consequently, Bogdanovic cannot be considered even a technical anticipation of the present claims.

Claims 1, 9-13 and 20-24 were rejected under 35 USC § 103(a) as being obvious over Bogdanovic in view of *Chem. Abst.* 76: 121246, *Chem. Abst.* 77: 164798 and *Chem. Abst.* 114: 42844. In response, Applicants point out that the deficiencies of Bogdanovic are discussed above. The Examiner relied on the various Chemical Abstracts to show the activation of

magnesium. However, as should now be clear, the present claims require more than this—they require the second metal-containing compound, and that the second metal-containing compound “[increase] the activity of [the] transition metal catalyst.” The Chemical Abstracts do not teach or suggest this latter feature of the present claims, which is also not taught or suggested by Bogdanovic. Accordingly, the combination of Bogdanovic and the Chemical Abstracts also does not teach or suggest this feature of the present claims. Consequently, the combination of Bogdanovic and the Chemical Abstracts cannot have made the present invention *prima facie* obvious to persons skilled in the art.

Claims 1, 2, 5, 6, 15 and 19 were rejected under 35 USC § 103(a) as being obvious over Ramsden, U.S. Patent No. 2,777,885. In response, Applicants point out that prior patent, U.S. Patent No. 6,117,372, stands as proof of the patentability of the use of a transition metal catalyst alone. The Examiner cannot escape the logic of this position by stating that each case stands on its own merits, particularly where, as here, the Examiner also examined the prior patent. When full faith and credit is given to her own prior work, the conclusion is inescapable that the instant claims must be nonobvious over Ramsden.

The present invention extends the protection afforded by U.S. Patent No. 6,117,372 to the use of the combination of a transition metal catalyst and the second metal-containing compound, wherein the second metal-containing compound “[increases] the activity of [the] transition metal catalyst,” as required by the instant claims. The data in the instant specification, as indicated above, prove the unexpected results achieved when the transition metal catalyst and the second



metal-containing compound are used in combination. Further, the data in the instant specification are, in fact, commensurate in scope with the claims, as the claims require that the second metal-containing compound “[increase] the activity of [the] transition metal catalyst,” and, therefore, the claims cover only embodiments where the unexpected improvement demonstrated is realized. The initial thrust of this rejection was that although Ramsden did not teach two catalysts combined together, there would have been motivation to use two known catalysts with the expectation that the results would at least be additive and “perhaps synergistic.” There is no support for an expectation of synergy, and definitely not for the unexpected increase in activity demonstrated by the instant examples. Accordingly, Ramsden cannot have made the present invention *prima facie* obvious.

Claims 1 and 20-24 were rejected under 35 USC § 103(a) as being obvious over Ramsden in view of *Chem. Abst.* 76: 121246, *Chem. Abst.* 77: 164798 and *Chem. Abst.* 114: 42844. In response, Applicants point out that the deficiencies of Ramsden are discussed above. The Examiner has again relied on the various Chemical Abstracts to show the activation of magnesium. However, as should now be clear, the present claims require more than this—they require the second metal-containing compound, and that the second metal-containing compound “[increase] the activity of [the] transition metal catalyst.” The Chemical Abstracts do not teach or suggest this latter feature of the present claims, which is also not taught or suggested by Ramsden. Accordingly, the combination of Ramsden and the Chemical Abstracts also does not teach or suggest this feature of the present claims. Consequently, the combination of Ramsden

and the Chemical Abstracts cannot have made the present invention *prima facie* obvious to persons skilled in the art.

Claims 1-24 were rejected under 35 USC § 112, first paragraph, as claiming new matter. In response, Applicants have amended claim 1 to delete the reference to “an activity enhancing amount,” and, instead, to recite that the second metal-containing compound “[in]creases] the activity of [the] transition metal catalyst.” This is clearly supported by the specification, for example, in the very first paragraph on page 6, wherein it is taught that:

“Surprisingly, it has now been found that *the catalytic activity of the transition metal catalysts* \* \* \* *can be significantly improved* by the addition of a main group metal component \* \* \*. For this purpose, compounds of main group metals of Periodic Table groups 1, 2 and 13 (especially Li, Na, Mg, Al or B) are used in which one or more elements of Periodic Table groups 14, 15, 16 or 17 (especially C, N, O or halogens) or hydrogen are bonded to the metal.”

Consequently, claims 1-24 no longer can be considered to include new matter.

Claims 1-24 were rejected under 35 USC § 112, second paragraph. In response, Applicants have amended claim 1 to delete the reference to “an activity enhancing amount,” and, instead, to recite a “second metal-containing compound.” Also, claim 1 has been amended to delete the reference to “an activity enhancing amount,” and, instead, to recite that the second

metal-containing compound “[increases] the activity of [the] transition metal catalyst.” Finally, claim 1 has been amended to make clear that the metal is bonded to “hydrogen or one or more elements of Periodic Table groups 14, 15, 16 or 17.” Consequently, claims 1-24 are believed to be definite.

Applicants believe that the foregoing constitutes a bona fide response to all outstanding objections and rejections.

Applicants also believe that this application is in condition for immediate allowance. However, should any issue(s) of a minor nature remain, the Examiner is respectfully requested to telephone the undersigned at telephone number (212) 808-0700 so that the issue(s) might be promptly resolved.

Early and favorable action is earnestly solicited.

Respectfully submitted,

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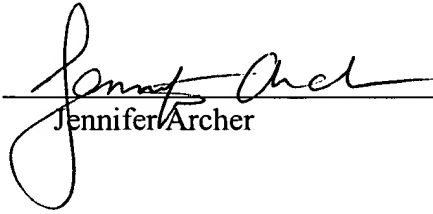
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CERTIFICATE OF EXPRESS MAILING

I hereby certify that the foregoing Amendment under 37 CFR § 1.116 and the attached Mark-Up Showing the Changes Made in the Previous Claim to Yield the Claim as Amended Above and the accompanying Request for Continued Examination and Petition for Extension of Time, and Information Disclosure Statement (23 Pages Total) are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR §1.10 to the United States Patent and Trademark Office, **BOX AF**, Hon. Commissioner for Patents, Washington, D.C. 20231, on the date indicated below:

Date: March 3, 2003

By

  
Jennifer Archer

**MARK-UP SHOWING THE CHANGES MADE IN THE PREVIOUS CLAIM TO YIELD  
THE CLAIM AS AMENDED ABOVE**

--1. (Twice Amended) A process for the preparation of a Grignard compound, said process comprising reacting an organic halide and magnesium metal in a solvent in the presence of:

- a) **a first metal-containing compound, which is** a transition metal catalyst comprising:
  - i) a transition metal selected from Periodic Table groups 3, 4, 5, 6, 7, 8, 9, 10 or 11; and
  - ii) one or more elements selected from groups 14, 15, 16 or 17 bonded to said transition metal; and
- b) [an activity-enhancing amount of an additional additional catalyst component, said additional catalyst component] **a second metal-containing compound, said second metal-containing compound increasing the activity of said transition metal catalyst, said second metal-containing compound** comprising:
  - i) a compound of a metal of Periodic Table groups 1, 2 or 13; and
  - ii) **hydrogen or** one or more elements of Periodic Table groups 14, 15, 16 or 17 [or hydrogen] bonded to said metal of Periodic Table groups 1, 2 or 13.--

--9. (Once Amended) The process according to claim 1, wherein a Li, Na, Mg, B or Al compound bound to a hydride, halogen, alkyl, aryl, alkoxy, aryloxy, amido or phthalocyanine group is used as said [additional catalyst component] **second metal-containing compound**.--

--10. (Once Amended) The process according to claim 10, wherein an organomagnesium halide is used as said [additional catalyst component] **second metal-containing compound**.--

--15. (Once Amended) The process according to claim 1, wherein **in addition to said first metal-containing compound and said second metal-containing compound** one or more cocatalysts are additionally employed. --